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EPA Region 5 Records Ctr.

226805

November 6, 2002

Mr. Fred Micke, On-Scene Coordinator
Ms. Verneta Simon, On-Scene Coordinator
U. S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd., SE-5J
Chicago, Illinois 60604

RE: Exploration for Radiological Impacts Below Groundwater, Lakeshore East, 221 N. Columbus Drive, Chicago, Illinois – STS Project No. 1-32193-XC

Dear Mr. Micke and Ms. Simon:

As you know, remediation of radiologically-impacted soil is in progress at the Lakeshore East site at 221 N. Columbus Drive, Chicago, Illinois. This work is being conducted in accordance with a Work Plan approved by USEPA on September 20, 2002.

In the course of the previously completed investigation at the site and during the current remediation, radiologically-impacted soil was found to extend below the level of groundwater. The Work Plan allows for impacted material to remain below the groundwater provided the location is documented and appropriate notice is made, the wording of which is to be resolved between the site owner and USEPA.

Following the identification of this material below the groundwater during remediation, efforts to remove the impacted material consisted of excavating to approximately 4 feet below the water table. At that point, no further excavation was practical because of unstable sideslopes. A decision was made to assess the material through a subsurface, downhole gamma survey.

The gamma survey was completed as follows. The area suspected of containing impacted soil below the water table was filled with clean soil. The fill was placed to approximately 2 feet above the level of water in the excavation. Based on survey measurements, the elevation of the water table is estimated at -0.65 feet CCD. A drill rig was mobilized to the site and hollow-stem augers were advanced to a depth of approximately 20 feet. A 3-inch diameter steel casing was placed inside the augers, and the augers were withdrawn. The resulting borehole consisted of an approximately 6-inch borehole with a 3-inch casing. Groundwater entered the annular space between the borehole wall and the casing. The inside of the casing was dry.

The gamma survey was taken in 6-inch increments using a Ludlum 2221 rate meter-scaler and a 2 x 2 inch NaI model 44-10 probe. The probe was fitted with a 1-inch lead end cap and a ¼-inch lead ring around the detector. This configuration is consistent with the configuration recently calibrated at the Kerr-McGee West Chicago calibration blocks, in cooperation with USEPA, for use with the steel casing. However, it is recognized that the configuration of the borehole is somewhat different than the calibration conditions. Specifically, the borehole is larger than the exterior of the casing, allowing an annular space. Additionally, this annular space is filled with water below a depth of 2 to 3 feet from the top of the survey. The annular space and presence of water are recognized as conditions that will reduce the gamma readings measured inside the casing. As a result, some value less than the calibrated threshold value would represent an exceedance of the cleanup criteria of 7.1 pCi/g. For the calibration conducted August 7, 2002, the exceedance reading was 5,396 counts for 30 seconds.

Four borings were advanced and four separate steel casings were installed. The attached Figure 1 shows the layout of the borings on an enlarged section of the fill isopach drawing. The borings are generally within approximately 8 to 10 feet of each other, over an area approximately 19 feet from north to south and 17 feet from east to west.

The downhole gamma readings show typically low gamma 30-second counts from 1,200 to about 2,000 in the upper 4 to 6 feet, generally, the clean fill placed in the previous excavation. The highest readings measured in each boring was between 6 to 8 feet deep: 2,910 in Boring No. 1 at 6 feet; 2,794 in Boring No. 2 at 7 feet; 4,395 in Boring No. 3 at 8 feet; and 4,036 in Boring No. 4 at 6 feet. Below these maxima, the readings return to reading in the range of 2,000 to 3,000 or lower, similar to the soil above the maximum readings. Table 1 shows the gamma values measured. Table 2 presents the boring coordinates.

The downhole survey data indicates a thin zone of material is present several feet below the groundwater table which exhibits elevated gamma radiation. While calibration values are not directly applicable, no readings were found showing an exceedance of the cleanup threshold. The highest reading is approximately 80 percent of the value indicating an exceedance.

It is requested that the USEPA accept the remediation that has been completed at this location and the downhole survey results provided herein as sufficient cleanup and documentation for this exclusion zone. In making this consideration, please note that this area lies within the previously designated Slip E area. The slip areas have been specified by USEPA as continuing to be subject to soil monitoring anytime excavation occurs for foundation installation, utility installation or any other purpose. Further, this specific area is proposed to be covered by an earthen berm approximately 15 to 20 feet high. Finally, the area is beneath a proposed roadway or in the proposed park, suggesting little likelihood that construction in the proposed development will penetrate this material.

Therefore, given the existing conditions and proposed construction, no further remediation appears necessary, no deed restriction beyond that already anticipated for the slip areas is necessary and no additional exploration is required to close this location.

Please contact us with any questions you may have regarding this information.

Regards,

STS CONSULTANTS, LTD.

Steven C. Kornder, Ph.D.
Senior Geochemist

Richard G. Berggreen, C.P.G.
Principal Geologist

cc: David Carlins, Kara Hughes, Lakeshore East Development

Attachments: Boring Layout Figure 1
Table 1 – Downhole Boring Log
Table 2 – Exploration Borings in Former Slip E

**Table 1**
**Downhole Boring Log**
**Lakeshore East Site**

| | | | |
|---|---|---|---|
| **Inst Model:** | Ludlum 2221 | **Date:** | 10/29/02 |
| **Serial #:** | 126497 | **Technician:** | Jerry Krane |
| **Probe Model:** | PR 44-10 | **Calbr. Date:** | 8/7/02 |
| **Serial #:** | 171991 | **7.2pCi/g =** | 5396 cts/30 sec |
| **Probe Config:** | Shielded 2X2 NaI w/ 1" endcap & ¼" ring around detector. | | |

| Depth (ft) | Boring Number (counts per 30 seconds) | | | |
|---|---|---|---|---|
| | EE1 | EE2 | EE3 | EE4 |
| 0.5 | 1401 | 1200 | 1376 | 1423 |
| 1 | 1432 | 1276 | 1573 | 1747 |
| 1.5 | 1477 | 1278 | 1655 | 1792 |
| 2 | 1552 | 1267 | 1911 | 1833 |
| 2.5 | 1371 | 1362 | 2009 | 1873 |
| 3 | 1359 | 1366 | 2033 | 1881 |
| 3.5 | 1170 | 1335 | 2010 | 1965 |
| 4 | 1294 | 1392 | 1886 | 2202 |
| 4.5 | 1915 | 1407 | 1640 | 2421 |
| 5 | 2519 | 1379 | 1724 | 2840 |
| 5.5 | 2693 | 1495 | 1931 | 3624 |
| 6 | 2910 | 1686 | 2013 | 4036 |
| 6.5 | 2684 | 2680 | 2445 | 3845 |
| 7 | 2534 | 2794 | 3274 | 3514 |
| 7.5 | 2428 | 2420 | 4169 | 3081 |
| 8 | 2209 | 2014 | 4395 | 2713 |
| 8.5 | 2162 | 2044 | 3423 | 2526 |
| 9 | 2106 | 2047 | 2592 | 2547 |
| 9.5 | 2273 | 2163 | 2393 | 2664 |
| 10 | 2161 | 2108 | 2429 | 2908 |
| 10.5 | 2235 | 2229 | 2614 | 2744 |
| 11 | 2125 | 2234 | 2257 | 2743 |
| 11.5 | 2312 | 2285 | 2115 | 2515 |
| 12 | 2319 | 2278 | 2364 | 2353 |
| 12.5 | 2126 | 2544 | 2420 | 2224 |
| 13 | 2179 | 2495 | 2324 | 1946 |
| 13.5 | 2423 | 2479 | 2639 | 1864 |
| 14 | 2669 | 2335 | 2627 | 1966 |
| 14.5 | 2871 | 2268 | 2205 | 2076 |
| 15 | 2801 | 2283 | 2132 | 2165 |
| 15.5 | 2790 | 2165 | 2049 | 2085 |
| 16 | 2688 | 2081 | 2137 | 1992 |
| 16.5 | 3441 | 1939 | 2156 | 1999 |
| 17 | 2579 | 2019 | 2297 | 2087 |
| 17.5 | 2658 | 2407 | 2598 | 2143 |
| 18 | 2403 | 2576 | 2483 | 1865 |
| 18.5 | 2182 | 2292 | 2357 | 1749 |
| 19 | 1924 | 1807 | 1957 | 1731 |
| 19.5 | | 1667 | 1970 | 1594 |
| 20 | | | | 1320 |

**Table 2**
***Exploration Borings in Former Slip E - 10/29/02***
**Lakeshore East Site**

| Location | Coordinates | |
|---|---|---|
| | Northing (ft) | Easting (ft) |
| EE1 | 18805 | 21664 |
| EE2 | 18808.5 | 21654 |
| EE3 | 18816 | 21666 |
| EE4 | 18824 | 21671 |

SLIP BOUNDARY

EE4

EE3

EE2

EE1

FORMER LOCATION OF SLIP "E"

SLIP BOUNDARY

BASE MAP:

ISOPACH FILL
THICKNESS MAP
STS WORK PLAN
FIGURE 4

LEGEND

ELEVATED GAMMA RADIATION AREA

EXCAVATION PHASE BORINGS (10/29/02)

COUNTOUR INTERVAL 0.5 FEET

SCALE IN FEET

20' 0 20'

| | | | |
|---|---|---|---|
| DESIGNED BY | SCK | DATE | 11/05/02 |
| DRAWN BY | PVP | DATE | 11/06/02 |
| APPROVED BY | RGB | DATE | 11/06/02 |

CADFILE X:\PROJECTS\132193XC\
XREF GG-132193-1.dwg
LAYOUT 11/05/2002 14:14

| NO. | DESCRIPTION | DATE | BY |
|---|---|---|---|

# LOCATION OF CASINGS FOR GAMMA SURVEY
# LAKESHORE EAST
# 221 N. COLUMBUS DRIVE
# CHICAGO, ILLINOIS

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| | |
|---|---|
| STS PROJECT NUMBER | 32193-XC |
| STS PROJECT FILE | GG-132193-1.dwg |
| SCALE | 1"=20' |
| FIGURE NO. | 1 |